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Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claims 1-17. (cancelled)

Claim 18. (currently amended) [[A]] An isolated human antibody, antigen-binding fragment thereof, or complex thereof comprising at least one antibody or antigen-binding fragment thereof, wherein the antibody, antigen-binding fragment thereof, or complex thereof is capable of binding to or cross reacting with an isolated epitope comprising the formula

$$[(W)_z - P - (Y)_t(S)_r - P]_q \qquad \text{Formula (I)}$$

Wherein:

W is any amino acid other than Aspartate and Glutamate

Y is an amino acid selected from the group consisting of Tyrosine, Asparagine, Serine and Threonine

P is independently selected from $(A)_m(A)_n(X)_u$ or $(X)_u(A)_n(A)_m$ or $(A)_n(X)_u(A)_m$ or $(A)_n(A)_m(X)_u$ or $(X)_u(A)_m(A)_n$ or $(A)_m(X)_u(A)_n$

S is sulfate or a sulfated molecule

X is any amino acid except Aspartate, Glutamate, or Tyrosine

A is independently selected from the group consisting of any negatively charged amino acid, leucine, isoleucine, proline, phenylalanine, serine, and glycine

q is 1 to 6

z is 0, 1, or 2

r is 0 or 1

t is 1, 2 or 3

u is 0 to 2

n is 0 to 3

m is 0 to 3

wherein if n = 0 then m >0; wherein if m = 0 then n >0; wherein if q is 1, r is 1, and if q is >1 at

least one of Y is sulfated; and further wherein the antibody, antigen-binding fragment thereof, or complex thereof comprises a first hypervariable region comprising SEQ ID NO: 20.

Claim 19. (currently amended) [[A]] An isolated human antibody, antigen-binding fragment thereof, or complex thereof comprising at least one antibody or antigen-binding fragment thereof, wherein the antibody, antigen-binding fragment thereof, or complex thereof is capable of binding to or cross reacting with an isolated epitope comprising the formula

$$(W)_z - P - (Y)_r - P - (Y)_t - P - (Y)_t - P \qquad \text{Formula II}$$

(S)$_r$ (S)$_r$ (S)$_r$

Wherein:

W is any amino acid other than Aspartate and Glutamate

Y is an amino acid selected from the group consisting of Tyrosine, Asparagine, Serine and Threonine

P is independently selected from $(A)_m(A)_n(X)_u$ or $(X)_u(A)_n(A)_m$ or $(A)_n(X)_u(A)_m$ or $(A)_n(A)_m(X)_u$ or $(X)_u(A)_m(A)_n$ or $(A)_m(X)_u(A)_n$

S is a sulfate or a sulfated molecule

X is any amino acid except Aspartate, Glutamate or Tyrosine

A is independently selected from the group consisting of any negatively charged amino acid, leucine, isoleucine, proline, phenylalanine, serine, and glycine

z is 0, 1, or 2

r is 0 or 1

t is 1, 2 or 3

u is 0 to 2

n is 0 to 3

m is 0 to 3

wherein if n =0 then m > 0; wherein if m = 0 then n > 0; wherein at least one Y is sulfated; and further wherein the antibody, antigen-binding fragment thereof, or complex thereof comprises a first hypervariable region comprising SEQ ID NO: 20.

Claim 20. (currently amended) [[A]] An isolated human antibody, antigen-binding fragment

thereof, or complex thereof comprising at least one antibody or antigen-binding fragment thereof, wherein the antibody, antigen-binding fragment thereof, or complex thereof is capable of binding to or cross reacting with an isolated epitope comprising the formula

$$(G)_z(X)_u(E)_n(D)_m(Y)_t(X)_u(E)_n(D)_m(Y)_t(X)_u(E)_n(D)_m(Y)_t(D)_m(E)_n(X)_u \quad \begin{matrix} (S)_r & (S)_r & (S)_r \\ | & | & | \end{matrix}$$

Formula III (SEQ ID NO:216)

Wherein:

G	is Glycine
E	is Glutamate
D	is Aspartate
Y	is Tyrosine
S	is sulfate or a sulfated molecule
X	is any amino acid except glycine, glutamate, aspartate and tyrosine
z	is 0, 1, or 2
t	is 1, 2 or 3
r	is 0 or 1
u	is 0 to 2
n	is 0 to 3
m	is 0 to 3

wherein at least one Y is sulfated; wherein if n = 0 then m > 0; wherein if m = 0 then n > 0; and further wherein the antibody, antigen-binding fragment thereof, or complex thereof comprises a first hypervariable region comprising SEQ ID NO: 20.

Claim 21. (cancelled)

Claim 22. (previously presented) A process for producing an antibody, antigen-binding fragment thereof, or complex thereof comprising at least one antibody or antigen-binding fragment thereof, wherein the antibody, antigen-binding fragment or complex thereof is capable of binding to or cross reacting with the isolated epitope of any of claims 18, 19, or 20,

comprising the steps of

(a) providing a phage display library;

(b) providing an isolated epitope according to any one of claims 18, 19, or 20;

(c) panning the phage display library for a phage particle displaying an oligopeptide or polypeptide capable of binding to the isolated epitope; and

(d) producing an antibody, antigen-binding fragment thereof, or complex thereof, comprising the peptide or polypeptide capable of binding to the isolated epitope.

Claim 23. (currently amended) [[A]] An isolated human antibody, antigen-binding fragment thereof, or complex thereof comprising at least one antibody or antigen-binding fragment thereof, wherein the antibody, antigen binding fragment or complex thereof are capable of binding the same epitope as an scFv antibody fragment comprising SEQ ID NO: 203.

Claim 24. (currently amended) [[A]] An isolated human antibody, antigen-binding fragment thereof, or complex thereof comprising at least one antibody or antigen-binding fragment thereof, wherein the antibody, antigen binding fragment or complex thereof comprises a first hypervariable region comprising [[or]] SEQ ID NO: 20.

Claim 25. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 24 further comprising a second hypervariable region comprising SEQ ID NO: 115 and/or a third hypervariable region comprising SEQ ID NO: 114.

Claim 26. (currently amended) The isolated [[A]] human antibody, antigen-binding fragment thereof, or complex thereof of claims 18-20 that is capable of binding to a peptide or polypeptide epitope of about 3 to about 126 amino acid residues in length and comprising at least 2 acidic amino acids and at least one sulfated tyrosine residue.

Claim 27. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 26, wherein the epitope further comprises a proline, leucine, isoleucine, serine, glycine, or phenylalanine residue.

Claim 28. (currently amended) The antibody, antigen-binding fragment thereof, or complex thereof of any of claims [[23-27]] 23-25, wherein the antibody or antigen-binding fragment thereof further is capable of binding to an epitope on a carbohydrate, peptide, glycolipid, glycoprotein, lipoprotein, and/ or lipopolysaccharide molecule.

Claim 29. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 28, further wherein the epitope on the carbohydrate, peptide, glycolipid, glycoprotein, lipoprotein, and/ or lipopolysaccharide molecule comprises at least one sulfated moiety.

Claim 30. (currently amended) [[A]] The isolated human antibody, antigen-binding fragment thereof, or complex thereof of claims 18-20 comprising at least one antibody or antigen-binding fragment thereof, that is capable of binding to at least two different molecules selected from the group consisting of PSGL-1, fibrinogen gamma prime (γ'), GP1bα, heparin, lumican, complement compound 4 (CC4), interalpha inhibitor, and prothrombin.

Claim 31. (cancelled)

Claim 32. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 30, that is capable of binding to each of PSGL-1, fibrinogen gamma prime (γ'), GP1bα, and heparin.

Claim 33. (cancelled)

Claim 34. (currently amended) [[A]] The isolated human antibody, antigen-binding fragment thereof, or complex thereof ~~comprising at least one antibody or antigen-binding fragment thereof~~ of claims 18-20, wherein the antibody, antigen-binding fragment or complex thereof is capable of binding to at least two different molecules selected from the group consisting of PSGL-1, fibrinogen gamma prime (γ'), GP1bα, heparin, lumican, complement compound 4 (CC4), interalpha inhibitor, and prothrombin and further is capable of binding to an epitope on a lipid, carbohydrate, peptide, glycolipid, glycoprotein, lipoprotein, and/or lipopolysaccharide molecule.

Claim 35. (currently amended) The antibody, antigen-binding fragment thereof, or complex thereof of claim 34, further wherein the epitope on the lipid, carbohydrate, peptide, glycolipid, glycoprotein, lipoprotein, and/ or lipopolysaccharide molecule comprises at least one sulfated moiety.

Claim 36. (currently amended) [[A]] The isolated human antibody, antigen-binding fragment thereof, or complex thereof of claims 18-20 ~~comprising at least one antibody or antigen-binding fragment thereof,~~ that is capable of cross-reacting with two or more different epitopes, each epitope comprising one or more sulfated tyrosine residues and at least one cluster of two or more acidic amino acids.

Claim 37. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 36 that is capable of cross-reacting with PSGL-1.

Claim 38. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 37 that binds to QATEYEYLDYDFLPETE (SEQ ID NO: 225) wherein at least one tyrosine residue is sulfated.

Claim 39. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 36 that is capable of cross-reacting with GP1b-α.

Claim 40. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 36 that binds to DEGDTDLYDYYPEEDTEGD (SEQ ID NO: 218) wherein at least one tyrosine residue is sulfated.

Claim 41. (previously presented) The antibody, antigen-binding fragment thereof, or complex of claim 39 that binds to TDLYDYYPEEDTE (SEQ ID NO: 215) wherein at least one tyrosine residue is sulfated.

Claim 42. (previously presented) The antibody, antigen-binding fragment thereof, or complex

thereof of claim 39 that binds to DEGDTDLYDYYP (SEQ ID NO: 265) wherein at least one tyrosine residue is sulfated.

Claim 43. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 39 that binds to YDYYPEE (SEQ ID NO: 266) wherein at least one tyrosine residue is sulfated.

Claim 44. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 39 that binds to TDLYDYYP (SEQ ID NO: 267) wherein at least one tyrosine residue is sulfated.

Claim 45. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 36 that is capable of cross-reacting with fibrinogen gamma prime (γ').

Claim 46. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 45 that binds to EPHAETEYDSLYPED (SEQ ID NO: 235) wherein at least one tyrosine residue is sulfated.

Claim 47. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 36 that is capable of cross-reacting with heparin.

Claim 48. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 36 that is capable of cross-reacting with complement compound 4 (CC4).

Claim 49. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof of claim 48 that binds to MEANEDYEDYEYDELPAK (SEQ ID NO: 224) wherein at least one tyrosine residue is sulfated.

Claim 50. (cancelled)

Claim 51. (previously presented) The antibody, antigen-binding fragment thereof, or complex

thereof, according to any of claims 23-25 that is capable of inhibiting cell rolling.

Claim 52. (cancelled)

Claim 53. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to any of claims 23-25 that is capable of inhibiting auto-immune disease.

Claims 54-59. (cancelled)

Claim 60. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to any of claims 23-25 that is capable of increasing the mortality rate of leukemia cells.

Claim 61. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to any of claims 23-25 that is capable of increasing the susceptibility of diseased cells to damage by anti-disease agents.

Claims 62-67. (cancelled)

Claim 68. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to any of claims 23-25 that is capable of inhibiting cell-cell, cell-matrix, platelet-matrix, platelet-platelet, and/ or cell-platelet complex formation.

Claim 69. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to any of claims 23-25 that is capable of inhibiting cell-cell, cell-matrix, platelet-matrix, platelet-platelet, and/ or cell-platelet adhesion.

Claim 70. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to any of claims 23-25 that is capable of inhibiting cell-cell, cell-matrix, platelet-matrix, platelet-platelet, and/ or cell-platelet aggregation.

Claim 71. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to any of claims 23-25 coupled to or complexed with an agent selected from the group consisting of anti-cancer, anti-metastasis, anti-leukemia, anti-disease, anti-adhesion, anti-thrombosis, anti-restenosis, anti-autoimmune, anti-aggregation, anti-bacterial, anti-viral, and anti-inflammatory agents.

Claim 72. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to claim 71, wherein the agent is an anti-viral agent selected from the group consisting of acyclovir, ganciclovir and zidovudine.

Claims 73-74. (cancelled)

Claim 75. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to claim 71, wherein the agent is an anti-autoimmune agent selected from the group consisting of leflunomide, denileukin diftitox, subreum, WinRho SDF, defibrotide, and cyclophosphamide.

Claim 76. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to claim 71, wherein the agent is an anti-adhesion/anti-aggregation agent selected from the group consisiting of limaprost, clorcromene, and hyaluronic acid.

Claim 77. (previously presented) The antibody, antigen-binding fragment thereof, or complex according to claim 71 wherein the agent is selected from the group consisting of toxins, radioisotopes, and pharmaceutical agents.

Claim 78. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to claim 77 wherein the toxin is selected from the group consisting of gelonin, *Pseudomonas* exotoxin (PE), PE40, PE38, ricin, and modifications and derivatives thereof.

Claim 79. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to claim 77 wherein the radioisotopé is selected from the group consisting of

gamma-emitters, positron-emitters, x-ray emitters, beta-emitters, and alpha-emitters.

Claim 80. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to claim 77 wherein the radioisotope is selected from the group consisting of ^{111}indium, ^{113}indium, ^{99m}rhenium, ^{105}rhenium, ^{101}rhenium, ^{99m}technetium, ^{121m}tellurium, ^{122m}tellurium, ^{125m}telluriunm ^{165}thulium, ^{167}thulium ^{168}thulium ^{123}iodine, ^{126}iodine, ^{131}iodine, ^{133}iodine, ^{81m}krypton, ^{33}xenon, ^{90}yttrium, ^{213}bismuth, ^{77}bromine, ^{18}fluorine, ^{95}ruthenium, ^{97}ruthenium, ^{103}ruthenium, ^{105}ruthenium, ^{107}mercury, ^{203}mercury, ^{67}gallium and ^{68}gallium.

Claim 81. (cancelled)

Claim 82. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to any of claims 23-25 coupled to or complexed with a vehicle or carrier that is capable of being coupled or complexed to more than one agent.

Claim 83. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to any of claims 23-25 wherein the vehicle or carrier is selected from the group consisting of dextran, lipophilic polymers, hydrophilic polymers, HPMA, and liposomes.

Claim 84. (previously presented) The antibody, antigen-binding fragment thereof, or complex thereof according to any of claims 23-25 coupled to or complexed with a radioactive isotope or other imaging agent.

Claim 85. (previously presented) A diagnostic kit comprising the human antibody, antigen-binding fragment thereof, or complex thereof according to claim 84.

Claim 86. (previously presented) A pharmaceutical composition, comprising the human ~~an~~ antibody, antigen-binding fragment thereof, or complex thereof according to any one of claims 23-25 in an amount effective to inhibit cell rolling.

Claim 87. (cancelled)

Claim 88. (previously presented) A pharmaceutical composition, comprising a human antibody, antigen-binding fragment thereof, or complex thereof comprising at least one antibody or antigen-binding fragment thereof, according to any one of claims 23-25 in an amount effective to inhibit auto-immune disease.

Claims 89-95. (cancelled)

Claim 96. (previously presented) A pharmaceutical composition, comprising the human antibody, antigen-binding fragment thereof, or complex thereof according to any one of claims 23-25 in an amount effective to increase the susceptibility of diseased cells to damage by anti-disease agents.

Claims 97-102. (cancelled)

Claim 103. (previously presented) A pharmaceutical composition, comprising the human antibody, antigen-binding fragment thereof, or complex thereof according to any one of claims 23-25 in an amount effective to inhibit cell-cell, cell-matrix, platelet-matrix, platelet-platelet, and/ or cell-platelet aggregation.

Claim 104. (previously presented) A pharmaceutical composition, comprising the human antibody, antigen-binding fragment thereof, or complex thereof according to any one of claims 23-25 in an amount effective to inhibit cell-cell, cell-matrix, platelet-matrix, platelet-platelet, and/ or cell-platelet complex formation.

Claim 105. (previously presented) A pharmaceutical composition, comprising the human antibody, antigen-binding fragment thereof, or complex thereof according to any one of claims 23-25 in an amount effective to inhibit cell-cell, cell-matrix, platelet-matrix, platelet-platelet, and/ or cell-platelet adhesion.

Claim 106. (previously presented) A pharmaceutical composition, comprising the human antibody, antigen-binding fragment thereof, or complex according to any one of claims 23-25

coupled to or complexed with an agent selected from the group consisting of anti-cancer, anti-metastasis, anti-leukemia, anti-disease, anti-adhesion, anti-thrombosis, anti-restenosis, anti-autoimmune, anti-aggregation, anti-bacterial, anti-viral, and anti-inflammatory agents.

Claim 107. (previously presented) The pharmaceutical composition, comprising the human antibody, antigen-binding fragment thereof, or complex thereof according to claim 106, wherein the agent is an anti-viral agent selected from the group consisting of acyclovir, ganciclovir and zidovudine.

Claims 108-109. (cancelled)

Claim 110. (previously presented) The pharmaceutical composition, comprising the human antibody, antigen-binding fragment thereof, or complex thereof according to claim 106, wherein the agent is an anti-autoimmune agent selected from the group consisting of leflunomide, denileukin diftitox, subreum, WinRho SDF, defibrotide, and cyclophosphamide.

Claim 111. (currently amended) The pharmaceutical composition, comprising the human antibody, antigen-binding fragment thereof, or complex thereof according to claim 106, wherein the agent is an anti-adhesion/anti-aggregation agent selected from the group ~~consisiting~~ consisting of limaprost, clorcromene, and hyaluronic acid.

Claim 112. (previously presented) A pharmaceutical composition according to claim 106 wherein the agent is selected from the group consisting of toxins, radioisotopes, and pharmaceutical agents.

Claim 113. (previously presented) A pharmaceutical composition according to claim 106 wherein the toxin is selected from the group consisting of gelonin, *Pseudomonas* exotoxin (PE), PE40, PE38, ricin, and modifications and derivatives thereof.

Claim 114. (previously presented) A pharmaceutical composition according to claim 106 wherein the radioisotope is selected from the group consisting of gamma-emitters, positron-

emitters, x-ray emitters, beta-emitters, and alpha-emitters.

Claim 115. (previously presented) A pharmaceutical composition according to claim 106 wherein the radioisotope is selected from the group consisting of ^{111}indium, ^{113}indium, ^{99m}rhenium, ^{105}rhenium, ^{101}rhenium, ^{99m}technetium, ^{121m}tellurium, ^{122m}tellurium, ^{125m}telluriunm ^{165}thulium, ^{167}thulium ^{168}thulium ^{123}iodine, ^{126}iodine, ^{131}iodine, ^{133}iodine, ^{81m}krypton, ^{33}xenon, ^{90}yttrium, ^{213}bismuth, ^{77}bromine, ^{18}fluorine, ^{95}ruthenium, ^{97}ruthenium, ^{103}ruthenium, ^{105}ruthenium, ^{107}mercury, ^{203}mercury, ^{67}gallium and ^{68}gallium.

Claim 116. (cancelled)

Claim 117. (previously presented) A pharmaceutical composition, comprising the human antibody, antigen-binding fragment thereof, or complex thereof according to any one of claims 23-25 coupled to or complexed with a vehicle or carrier that is capable of being coupled or complexed to more than one agent.

Claim 118. (previously presented) A pharmaceutical composition according to claim 117 wherein the vehicle or carrier is selected from the group consisting of dextran, lipophilic polymers, hydrophilic polymers, HPMA, and liposomes.

Claims 119 -154. (cancelled)

Claim 155. (currently amended) [[A]] <u>The isolated</u> human antibody, antigen-binding fragment thereof, or complex thereof ~~comprising at least one antibody or antigen-binding fragment thereof wherein the antibody, antigen-binding fragment or complex thereof~~ <u>of claims 18-20</u> is capable of binding to an isolated epitope comprising GPIbα amino acid sequence TYR 276 to Glu 282, wherein at least one of the amino acids 276, 278 and 279 is sulfated

Claims 156-163. (cancelled)